3A88-14

YUKON AREA COMMERCIAL AND SUBSISTENCE SALMON FISHERIES 1988 MANAGEMENT PLAN

By

Alaska Department of Fish and Game
Division of Commercial Fisheries
Arctic-Yukon-Kuskokwim Region

Regional Information Report[1] No. 3A88-14

Alaska Dept. Fish and Game
Division of Commercial Fisheries
333 Raspberry Road
Anchorage, AK 99518
Phone 344-0541

Alaska Dept. Fish and Game
Division of Commercial Fisheries
1300 College Road
Fairbanks, AK 99701
Phone 456-4286

April 1988

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[1] The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse and ad hoc informational purposes or archive basic uninterpreted data. To accommodate needs for up-to-date information, reports in this series may contain preliminary data.

INTRODUCTION

This management plan was developed to inform fishermen, processors, and other interested persons about the status of the 1988 Yukon River salmon runs and Department strategies that may be used to regulate the various salmon fisheries.

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of commercial and subsistence fisheries in the Yukon area. The overall objective of the Department's research and management program is to manage the various salmon runs for optimum sustained yield.

The subsistence fishery is subject to few restrictions except in areas where intensive commercial fisheries occur. A majority of the commercial fishermen usually take salmon for both commercial and subsistence purposes. Therefore, in order to enforce commercial fishing regulations, it is necessary to place some restrictions on the subsistence fishery.

Management is made difficult by the complexity of the salmon runs and fisheries and by the huge size of the drainage (330,000 mi^2). Since most of the commercial fisheries have only recently expanded, there are limited escapement and return data on which to fully evaluate the effects of increased commercial harvests. Salmon fisheries are scattered over 1,400 rivermiles harvest mixed stocks of migrating fish usually several weeks (migration time) and hundreds of miles from their spawning grounds. Because the Yukon River commercial fishery is essentially a mixed-stock fishery, some tributary populations may be under or overharvested in relation to their actual abundance. Spawning ground escapements and return data indicate that important stocks of chinook and fall chum salmon have been overharvested in recent years. Based on current knowledge, it is impossible to manage most stocks independently, and there is concern that small spawning populations may be reduced to very low levels.

The management of the Yukon River salmon runs require a conservative approach as a large portion of subsistence harvests are taken after major commercial fisheries, and escapement information is not available until fish reach spawning grounds, in most cases, several weeks after the lower river harvests. Fishery management is complicated by variable run timing of mixed stocks, increased effort and efficiency of the commercial fishery, and harvest allocation complexities which include the need to provide for subsistence harvests. Primary management tools are guideline harvest ranges established by the Alaska Board of Fisheries and by emergency orders (management orders), which are used to open the commercial fishing season, establish fishing period frequency and duration, and establish mesh size restrictions.

STATUS OF STOCKS AND FISHERY

Chinook Salmon

The Yukon River commercial salmon fishery in Alaska dates back to 1918. Chinook salmon commercial catches have ranged from 64,000 to 158,000 fish since 1961 (Table 1), and the recent 5-year average (1983-1987) is 129,000

fish (lower river districts 124,000, upper river districts 5,000). The majority of the commercial harvest occurs in Districts 1 and 2 (Figure 1). In addition to the Alaskan catch, the commercial fishery at Dawson (Yukon Territory) harvests an average of 11,400 chinook salmon annually (1983-1987 average) (Table 3). Throughout the Yukon River drainage an average of 52,900 chinook salmon is taken annually (1983-1987 average) for subsistence use (46,000 U.S., 6,900 Canadian) (Tables 2 and 3). Since 1979, the total (commercial and subsistence) chinook salmon harvest in the drainage has increased substantially from the 1974-1978 average catch of 115,000 (109,000 U.S., 6,000 Canadian) to 192,200 (174,500 U.S., 17,700 Canadian), (1979-1987 average).

Spawning populations of chinook salmon are widely distributed throughout the drainage and have been documented in the Archuelinguk River located 80 miles from the mouth of the Yukon River and as far upstream as the headwaters of the drainage in the Yukon Territory of Canada, nearly 2,000 miles from the mouth.

Yukon River chinook salmon runs during the 1972-1976 period generally declined in magnitude based on comparative catch and available escapement data. Recorded escapements during 1977-1981 were above average in most index streams and in some instances surpassed levels observed during the early 1960's prior to maximum development of the fisheries. Information available since the spring of 1986, gained through scale pattern analysis and tagging studies, indicate that middle and upper river chinook salmon stocks have undergone unacceptably high harvest rates in recent years. Exploitation rates cannot be accurately estimated at this time for lower and middle river chinook salmon stocks due to the lack of reliable total population estimates. However, through utilization of aerial survey enumeration techniques, it appears that middle river stocks have been overexploited during some years and that lower river stocks have not been overharvested in recent years. Chinook salmon bound for upper river spawning areas have had harvest rates estimated between 78% and 91% in recent years. Based on studies in other areas, harvest rates in excess of 67% will likely result in a serious decline in chinook salmon abundance; this situation must be offset by reduced harvest during years of low returns to ensure that long-term harvest and escapement levels are maintained.

Chinook salmon of western Alaska origin have been intercepted yearly by the Japanese mothership and land-based gillnet fisheries. Yukon River chinook salmon composed the majority of western Alaska stocks taken in the Bering Sea mothership catches. These catches have averaged 78,000 fish during the 1982-1986 period.

Also, the expanding domestic and joint venture trawl fleets in the North Pacific and Bering Sea waters are known to take chinook and chum salmon, which represent an additional potential threat to these same stocks. There is some question whether accurate monitoring of incidental salmon catches is occurring.

Summer Chum Salmon

Prior to the mid-1960's, summer chum salmon were used primarily for subsistence purposes, mostly for sled dog food. As the snow machine replaced the sled dog, subsistence fishing for summer chum salmon declined. Beginning in 1967, commercial fishing regulations affecting summer chum salmon were gradually liberalized. As a result of regulation changes (e.g., mesh size specifications and earlier openings of the fishing seasons), increased fishing effort and processing capacity, and the development of Japanese markets and upper Yukon area roe-directed fisheries, the Yukon River summer chum salmon commercial harvest has increased sharply. Only 11,000 summer chum salmon were taken commercially in 1967, while a record 1,006,938 fish in-the-round and 189,068 pounds of roe were harvested in 1981. The recent 5-year average commercial harvest is 602,836 fish in-the-round and 191,901 pounds of roe (Table 1). The majority of the commercial harvest takes place in Districts 1, 2, and 4. District 4 supports what has been primarily a roe-directed fishery. Approximately 261,000 summer chum salmon are taken annually (1982-1986 average) for subsistence use throughout the drainage.

Summer chum and chinook salmon exhibit similar run timing, entering the lower river during June and early July. The Andreafsky and Anvik Rivers are the primary summer chum salmon-producing rivers. Escapement of over 1 million summer chum salmon in the Anvik River has occurred 3 times since sonar enumeration within this drainage began in 1979. The Koyukuk and Tanana Rivers are also key summer chum salmon-producing systems; however, the relative magnitude of the escapements to those systems is much lower than to the Anvik River. Documented harvests and escapements yield minimum population estimates ranging from 1.2 to 5.6 million fish annually. With the exception of 1987, Yukon River summer chum salmon escapements have been good in recent years.

Fall Chum Salmon

Because of their good quality (bright, silvery appearance, large size, robust appearance, and high oil content) which is related to their upriver spawning destinations, fall chum salmon are in great demand and are commercially harvested in all fishing districts. The 1983-1987 average commercial harvest in Alaska is 183,600 fish (Table 1), while in the Yukon Territory of Canada approximately 27,300 have been taken annually (Table 3). Fall chum salmon are of greater importance for subsistence than summer chum salmon upstream of the mouth of the Koyukuk River where it is estimated that fall chum salmon compose 60%-75% of the total subsistence harvest. Approximately 197,000 fall chum salmon have been taken annually (1983-1987 average) for subsistence throughout the drainage (Table 2).

Fall chum salmon enter the lower Yukon River from mid-July through early September. Major spawning areas are located in the Tanana River (Toklat River, Delta River, and the upper Tanana River near Big Delta), the Porcupine River (Sheenjek and Fishing Branch Rivers), and upper Yukon River (Kluane and in mainstem Yukon River) drainages. Tagging studies near Galena and Ruby indicated that the early run (mid-July through early August) of fall chum salmon may be bound primarily for the Porcupine River system and Yukon Territory systems. The late run of fall chum salmon

(mid-August through early September) is believed to be destined primarily for the Tanana River drainage. Stock identification studies using protein genetics and scale patterns are presently underway to improve our understanding of fall chum salmon timing by spawning stock in the lower fishery. During recent years, escapement objectives have not been met for most spawning streams. Based on very low escapements recorded in 1982-1984, returns that began in 1986 are expected to remain depressed through 1988.

In response to the poor escapements documented in 1982, the Board of Fisheries reduced fishing time and enacted season closures. Despite these new fishing restrictions, escapement objectives were not achieved in 1983 or 1984. A relatively large return in 1985 with restricted fishing periods in place resulted in improved escapements. Additional regulatory restrictions were adopted by the Board prior to the 1986 season to reduce the risk of overharvesting an anticipated weak return. These regulatory restrictions included reducing guideline harvest ranges in all districts, a July 15 closure in the lower Yukon area, and providing for emergency order establishment of commercial fishing periods in Districts 4, 5, and 6.

Although annual return of fall chum salmon has fluctuated, there is no trend of decreasing abundance through 1986. However, estimated total utilization (commercial and subsistence catches combined) during the 1981-1986 period has increased 12% compared to the 1975-1980 period while escapements have declined.

Coho Salmon

This species is of minor importance in both the commercial and subsistence fisheries and is taken incidental to the more numerous fall chum salmon. The Alaskan commercial catch since 1961 has ranged from 350 to 82,000 fish and the 1983-1987 average is approximately 40,000 fish (Table 1). The commercial harvest of coho salmon is dependent upon the timing of the fall chum salmon fishing season. Annual subsistence catches throughout the drainage are approximately 37,700.

Coho salmon begin entering the lower Yukon River about 2 weeks later than fall chum salmon and the run peaks during late August. Spawning occurs discontinuously throughout the drainage with the largest spawning concentrations documented in the tributaries of the upper Tanana River drainage.

OUTLOOK FOR 1988

Chinook Salmon

The majority of chinook salmon returning to the Yukon River are 6-year-old fish; however 5- and 7-year-old fish make a significant contribution to the run. The 1982 brood year (6-year-olds in 1988) was average to below average in abundance as judged by comparative escapement information. Survival and production by the 1982 brood year is apparently below average based on findings of lower-than-average contribution of 5-year-old fish to the 1987 return. It is expected that the 1988 return of 5-year-olds (1983 brood year) will be near average based on 1983 run strength and

escapements. The return of 7-year-old fish (1981 year class) is expected to be above average as the return of this year class in 1986 as 5-year-olds and 1987 as 6-year-olds was above average. Overall, the 1988 chinook salmon run is anticipated to be below average in strength, similar in abundance and age structure to the 1986 return. The commercial harvest in Alaska is expected to total 70,000 to 100,000 fish.

Summer Chum Salmon

Yukon River summer chum salmon return primarily as 4-year-old fish, although substantial 5-year-old returns often result from good brood survival years. The return of 4-year-old fish in 1988 will be dependent on production from the 1984 brood year and survival of the resulting cohort. Based on available catch and limited escapement data, the magnitude of the 1984 summer chum run was judged to be above average in abundance. The return of 5-year-olds in 1988 is expected to be below average in strength based on the poor return of 4-year-old fish in 1987. In summary, based on evaluation of brood year run size data and assuming average survival, it is expected that the Yukon River summer chum salmon return in 1988 will be average to above average in magnitude. The commercial harvest is expected to be similar to the recent 5-year average (600,000 fish and 190,000 pounds of roe).

Fall Chum Salmon

Similar to the summer run, fall chum salmon return primarily as 4-year-old fish. Escapements in 1984 (which will produce 4-year-olds in 1988) were below average. The return of 5-year-olds (1983 brood year) is expected to be average to below average based on the number of 4-year-olds in 1987. In summary, based on evaluation of brood year escapements and assuming average survival, a below-average return of fall chum salmon is expected in 1988. A projection of the fall chum salmon return based on an estimate of total parent-year escapements, the average maturity schedule, and expected returns per spawner indicates that a limited commercial fishery may be allowed during 1988. Commercial harvest is expected to range between 0-80,000 fish.

Coho Salmon

Coho salmon return primarily as 4-year-old fish. Comprehensive escapement information for coho salmon is lacking, but escapement surveys in the Tanana River systems indicated above-average run strength in 1984. The proportion of 3-year-old fish in 1987 test-fish catch samples further suggests the 1988 return of coho salmon will be above average in magnitude. The commercial harvest in Alaska will be dependent on the timing and frequency of fishing periods allowed for fall chum salmon, but is expected to be 0-50,000 fish.

REGULATIONS

The Alaska Board of Fisheries, at its December 1987 meeting, adopted or modified the following Yukon river fishing regulations:

Commercial Fishing

In all districts, the maximum allowable depth of gillnets is now 60 meshes for nets with larger than 6-inch mesh, and gillnets of 6-inch or smaller mesh may not be more than 70 meshes deep.

In District 4, the commercial salmon fishing season will open between June 10 and June 25 by emergency order.

Subsistence Fishing

Regulations were adopted which clarify and allow the use of live blackfish as bait in subsistence fishing, and permits are now required for subsistence pike fishing in the Minto Flats area. In the coastal areas of the Yukon River Delta, the subsistence taking of halibut was limited to the use of a hand-held line with no more than 3 hooks attached.

Personal-Use Fisheries

As a result of the new subsistence law which limits subsistence hunting and fishing to rural Alaska residents, the Board created personal-use salmon fisheries for the Yukon and Tanana River drainages. This action will allow continued participation in salmon fisheries by residents of non-rural communities. These fisheries will be regulated much the same as are subsistence fisheries, except that salmon taken for personal-use may be used only for human consumption and bait. In addition, personal-use fishermen are required to secure a fishing permit from the local ADF&G office and to possess a resident sport fishing license.

Regulations which were in effect during the 1986 and 1987 fall chum salmon seasons will remain in place through the 1988 season.

MANAGEMENT STRATEGY, LOWER YUKON AREA (DISTRICTS 1, 2, and 3)

Chinook and Summer Chum Salmon

Sustained yield management of the chinook and summer chum salmon is complicated by the overlapping run timing of these species. The harvest of summer chums, for example, is largely a function of management strategies and actions applied to the chinook run rather than on abundance of summer chums. In Districts 1 and 2, the chinook and summer chum harvests are managed by field announcement to regulate openings and closures, fishing periods, and gillnet mesh size restrictions. A guideline harvest range of 60,000 to 120,000 chinook salmon for Districts 1 and 2 has been established by the Board of Fisheries. In District 3, the guideline harvest range for chinooks is 1,800 to 2,200. No guideline harvest range for summer chums has yet been established.

Commercial Fishing Season

The directed commercial chinook salmon fishery will open by management order when increasing subsistence and/or test-net catches have occurred over a 7- to 10-day period. This strategy of allowing for the early portion of the run to build, prior to commercial fishing, will provide for

uninterrupted subsistence fishing in the lower Yukon, allows that segment of the run to become well distributed prior to the opening, and will provide for passage of a portion of the early run segment out of the lower Yukon districts prior to commercial harvest. The fish that pass out of the lower districts are bound for primarily middle and upper river areas and are subject to intensive harvest pressure along the entire course of their migration.

Fishing Periods

A primary element of the Department's management strategy during the 1988 season will be an attempt to spread the harvest over the duration of the run and to direct, to the extent practical, the majority of the catch away from the early portion of the run. This action is required because of the anticipation of a weak return of upper river-origin stocks and indications that, in some years, the upper river stocks demonstrate a tendency to be concentrated during the early portion of the run.

To achieve this goal, it is expected that the directed chinook salmon fishery will begin with two 12-hour weekly fishing periods in Districts 1 and 2 and, if run strength and cumulative harvest allows, establishing periods 24 hours in length during the latter portion of the run. In District 1, when a 12-hour period is scheduled, fishing will begin at 6 p.m. on Mondays or Thursdays and continue until 6 a.m. the following day. Periods 24 hours in length are expected to begin on the same days and at the same times as 12-hour periods.

In Districts 2 and 3, when 12-hour periods are implemented, fishing will begin at 6 a.m. on Mondays or Thursdays and close at 6 p.m. the same day.

If an unusually large portion of the allowable catch is taken early in the run, it may become necessary to close the large-mesh fishery for a period in order to more effectively spread the harvest across the run. If run strength and harvest develops as expected, the use of unrestricted-mesh-size gillnets for chinook salmon will likely cease when the combined District 1 and 2 harvest approximates 60,000 fish. Based on past years' data, it is anticipated that the incidental harvest of chinooks taken with small mesh gear will account for approximately 20,000 additional chinook salmon.

Note: Since the harvest level will determine when the directed chinook season ends, it may not be possible to allow an equal amount of fishing time in Districts 1 and 2.

If the summer chum run is average or above-average in strength, it is likely that 6-hour or 12-hour, restricted-mesh periods will be implemented during the chinook seasons in Districts 1 and 2. Restricted mesh size periods after the directed chinook fishery will probably be 24 hours in duration.

It is anticipated that the directed District 3 chinook fishery will close when the harvest reaches the lower end of the chinook salmon guideline harvest range. Incidental catches of chinook salmon made during restricted-mesh openings are expected to result in a total catch of approximately 2,000 chinooks in District 3.

Fall Chum Salmon

Generally poor escapements of fall chum salmon which were documented throughout the Yukon and Tanana River drainages in 1984 are expected to produce a weak return in 1988. The Department's projection of run strength indicates that a run similar in overall magnitude to the 1986 run is likely to occur in 1988. If accurate, this projection suggests the possibility of a limited commercial harvest in 1988; commercial harvests, if allowed, are not expected to exceed 80,000 fish for all districts combined.

The Department will monitor in-season estimators of abundance (Lower Yukon test fishery, Yukon sonar, the middle Yukon test fishwheel, and subsistence catches) in order to assess run strength; these indicators will constitute the basis for decisions regarding management of these stocks.

It should be noted that because of shortcomings inherent in available run assessment techniques, a tendency to allow overharvest, and an apparent trend toward increasing subsistence harvests, the 1988 fall chum fishery will be managed on a very conservative basis. It is possible that no commercial harvest will be allowed in 1988.

Commercial Fishing Season

The fishing season will close July 15 in Districts 1, 2, and 3 to protect the early portion of the fall chum salmon run. During the closure, daily test fishing catches, and subsistence catches and hydroacoustic counts at Pilot Station will be monitored to assess the run. If funds are available, evaluation of fall chum salmon run strength will continue throughout the entire run. If run strength as indicated by the Department monitoring program is poor, the commercial fishery will remain closed. However, the commercial fishing season may reopen by emergency order if the fall chum salmon run is judged to be of sufficient magnitude. Unless the run is unexpectedly large, it is probable that openings in the lower Yukon will not occur earlier than August 15-20. This strategy should provide adequate time for run strength assessment, and late openings would optimize harvest of coho salmon.

Fishing Periods

If the return of fall chum is judged large enough to satisfy spawning ground and subsistence fishery requirements, the commercial fishery will be reopened by management order on a restricted fishing time basis. After an initial fishing period in District 1, catch and abundance data would be evaluated before the initial period would be announced in District 2. Evaluation of catch and run strength data will be made following each period prior to announcement of subsequent fishing periods.

If commercial fishing occurs, it is possible that no more than one period per week (per district) will be allowed. Period length will likely be one to two 12-hour periods per week in the coastal Set Net Only Area of District 1 and 6 hours in the remainder of District 1, and in Districts 2 and 3. It may not be possible to allow equal amounts of fishing time in each district.

Guideline Harvest Range

The lower Yukon commercial fall chum fishery harvest levels will be governed by the flexible guideline harvest range of 0-110,000 established by the Board of Fisheries. Given the likelihood of a small run in 1988 and the need for conservative management, it is probable that the combined District 1, 2, and 3 harvest will not exceed 55,000 fish, which is the midpoint of the range.

Coho Salmon

Coho and fall chum salmon runs overlap to a considerable extent, but the peak of the coho salmon run usually occurs later in the season. Coho salmon runs have been above average in magnitude in recent years and there should be a harvestable surplus available to commercial fishermen in 1988. Because the fall chum and coho salmon runs overlap to a large extent, the abundance of fall chums during the late portion of the run will be a major factor in deciding whether coho openings can occur. If allowed, the coho salmon fishery will be managed to minimize the by-catch of fall chum salmon which will require delaying the fishery until approximately August 15-20.

MANAGEMENT STRATEGY, UPPER YUKON AREA (DISTRICTS 4, 5, AND 6)

Chinook and Summer Chum Salmon

As in the lower Yukon area, the chinook and summer chum salmon runs in the upper Yukon area exhibit similar run timing. The upper Yukon area commercial fishery is limited to a combined 5,550-6,950 chinook salmon guideline harvest range which is apportioned to the three districts. Presently, there are no guideline harvest ranges specifying the numbers of summer chum salmon which may be taken. Management of the summer chum salmon fishery is based on in-season assessment of run strength.

Weekly commercial and subsistence fishing time is split into two 48-hour fishing periods per week in most areas of the upper Yukon area. Split fishing periods help spread the harvest over a greater portion of the run and afford additional protection to smaller stocks which are more susceptible to overharvest than the larger, more productive stocks. Also, split periods allow the Department additional time to collect and evaluate catch data between periods.

If the lower end of the District 4 chinook salmon guideline harvest range (2,250-2,850 fish) is taken before July 10, the commercial fishing season will be closed by management order. The season may be reopened for summer chum salmon during the period July 10 to July 31 for fishing with gillnets of 6-inch or smaller mesh and fishwheels. This action would minimize additional harvest of large chinook salmon and still allow continued commercial fishing for the more abundant summer chum salmon.

In Subdistrict 4-A (upstream from Stink Creek), drift-netting for subsistence purposes is allowed from June 21 through July 14 and after August 2. The staff will attempt to monitor this fishery in season and a post-season survey will be made to quantify numbers of fish taken by gear type.

In District 5, chinook salmon are mostly taken with gillnets for both commercial and subsistence purposes. Summer chum salmon are usually not abundant and are mainly retained for subsistence purposes. There are four subdistricts within the district with several having separate guideline harvest ranges. The overall guideline harvest range for the district is 2,700-3,300 chinook salmon. When the mid-point of the chinook salmon guideline harvest range is taken, the appropriate subdistrict(s) will be closed until the fall season.

The Tanana River chinook and summer chum fisheries are in relative close proximity to the major spawning areas. This factor may, in some years, allow management of the Tanana River fisheries on the basis of estimated spawning ground escapement. This situation is somewhat in contrast to fisheries in Districts 1-5 where commercial and subsistence fishery management decisions are based on estimates of abundance made when fish are still hundreds of miles away from spawning streams.

The guideline harvest range for District 6 is 600-800 chinook salmon. When escapement goals for the Salcha and Chena Rivers have been achieved or are projected to be achieved, the chinook harvest may exceed the guideline harvest range due to incidental catches during the summer chum commercial fishery.

Depending on chinook run timing and the abundance of summer chums, a reopening of the commercial summer chum salmon season may follow the closure once the majority of the chinook run has passed through the fishery. This could occur only when the incidental harvest of chinook salmon would be minimal because of run timing or low abundance.

Fall Chum and Coho Salmon

Fall chum and coho salmon are normally present from mid-August through early October in the upper Yukon area. As in the lower Yukon area, the 1988 return of fall chums will be managed in a conservative manner owing to the anticipation of a low return. Commercial fishing periods, if allowed, will be established by emergency order with an expected maximum of 2 days per week. As in the lower Yukon, reduced commercial fishing time has the effect of reducing the allowable amount of subsistence fishing time during the commercial season. If the commercial season is opened on a restricted basis, additional subsistence periods may be established in order to compensate for lost subsistence fishing time.

In the middle and upper river areas, abundance estimates will be supplemented by run strength data from the lower Yukon; however, decisions on whether to allow commercial harvest will be based on available data, independent of management decisions made in lower river districts.

Current guideline harvest ranges for Districts 4, 5, and 6 allow commercial harvest of 0-50,250 fall chum and coho combined. It is likely that commercial harvest, if allowed, will not exceed the midpoint of the established range for each district.

District 4

Regulations do not provide for commercial harvest of fall chums in Subdistrict 4-A and the season in that area closes on August 1. In Subdistricts 4-B and 4-C, the commercial fishing season for summer chums will close by emergency order no later than August 10. This action will be taken in order to provide protection to the early portion of the fall chum run and to allow the Department time to assess that component of the fall run. The commercial fishing season will be reopened by emergency order only if run strength is determined to exceed escapement and subsistence needs.

Subdistrict 4-B is that area of District 4 along the north bank of the Yukon River from Cone Point to the mouth of Illinois Creek, including nearshore islands. Tagging studies have shown that most fall chum salmon that migrate along the north bank are destined for spawning streams within the Porcupine and upper Yukon drainages, and that fall chum and coho salmon traveling along the south bank (Subdistrict 4-C) are bound primarily for the Tanana River drainage.

Establishment of differing season, fishing periods, or harvest levels for Subdistricts 4-B and 4-C may be required (if the season is opened), depending on relative strength of the various stocks. It is expected that in most years, however, these two subdistricts will be managed as one.

Districts 5 and 6

In Districts 5 and 6, decisions regarding commercial harvest of fall chum and coho will be dependent on the Department's evaluation of run strength. This assessment will be based on test fishing data, sonar data, and reports of relative run strength by subsistence fishermen.

Although the timing of fall chum stocks differs in Districts 5 and 6, the opening of either district will occur only after fish have become well distributed throughout the major harvest areas in each district respectively. This strategy should allow for better-balanced escapements and harvest in each district.

As in District 4, separate subdistricts (5-A and 5-B) along the south and north banks of the Yukon River have been established to allow stock-specific management of fall chum salmon. Similar to the management strategy outlined for District 4, differential fishing periods (and harvests) may be applied. However, because of the Department's relative inability to accurately assess run strength in this part of the river, independent management of these subdistricts is unlikely unless unusually large or small runs occur in those subdistricts.

A separate fall chum and coho salmon guideline harvest range of 0-2,000 fish will be in effect for Subdistrict 5-D of District 5. It is expected that subdistrict season openings within District 5 will be concurrent and that subdistrict closures may be at different times.

In Subdistrict 6-C the commercial fishing season will be closed at such time as the personal-use fall chum and coho salmon quota of 5,200 fish

(both species combined) has been met (Personal-Use Fishery Management Plan, Subdistrict 6-C) or when the district-wide commercial guideline has been achieved.

Personal-Use Fisheries

In the spring of 1986, the Alaska Legislature made significant amendments to the State subsistence law. The most important of these was a wording change which, in effect, redefines subsistence hunting and fishing in Alaska as rural activities. This revision was an attempt to conform to Title VIII of ANILCA, which regulates subsistence activities in Alaska.

This change in law required the Alaska Boards of Fisheries and Game to define communities and areas of the state as being either rural or nonrural in order to establish who (on the basis of residency within the state) is entitled to hunt and fish for subsistence purposes.

Since a number of communities in the Yukon and Tanana River drainages were designated as nonrural, residents of those areas are no longer eligible to participate in subsistence activities. In order to enable those Alaskan residents the opportunity to continue to harvest salmon, the Board of Fisheries established in Yukon area regulations a new use category for those persons. This "personal-use" category allows residents of Fairbanks, Delta, Clear, Healy, and other nonrural areas to continue to harvest salmon for personal/family consumption. No personal-use category was established for miscellaneous freshwater fishes such as pike, burbot, whitefish, etc.

In general, personal-use salmon fisheries will be managed by regulations currently established for subsistence fishing in Districts 1-6 of the Yukon area. The major exception to this is that when salmon runs are judged too small to sustain normal levels of subsistence and personal-use harvest, the personal-use fishery must be closed before restrictions can be imposed on the subsistence fishery. Another exception is that salmon taken for personal-use may not be used as dog food and that personal-use fishermen are required to have a valid, resident Alaska sport fishing license and a personal-use fishing permit issued by the Department.

Aside from these differences, Yukon and Tanana River personal-use fisheries will operate under the same regulations regarding fishing seasons and period, gear specification, identification, and closed waters.

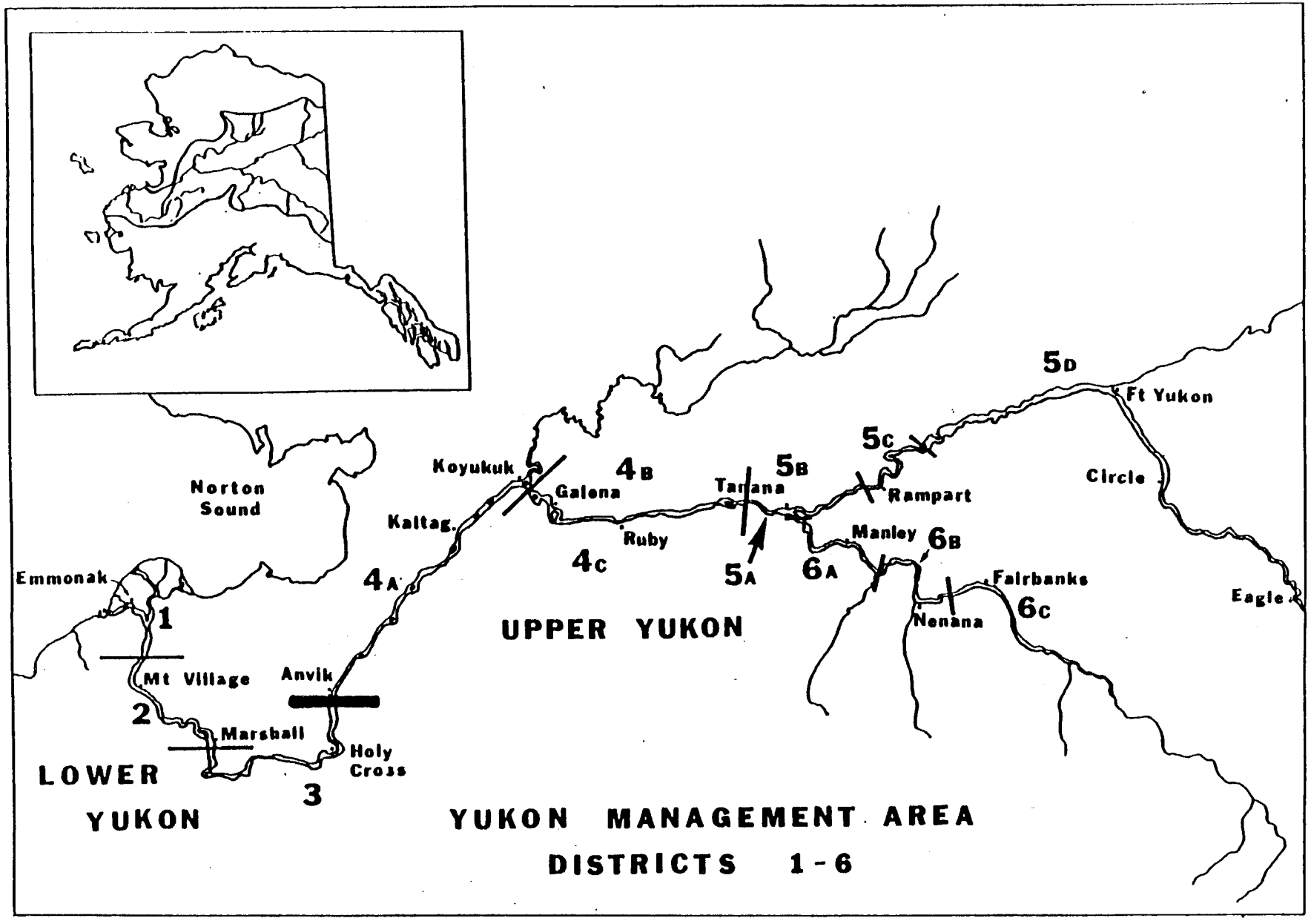

Figure 1. Yukon River management area, Districts 1 - 6, Alaska.

Table 1. Alaskan commercial catch of Yukon River salmon, 1961-1987. a

Year	Chinook	Summer Chum		Fall Chum		Coho
		Numbers	Roe	Numbers	Roe	
1961	119,664	-	-	42,461	-	2,855
1962	94,734	-	-	53,116	-	22,926
1963	117,048	-	-	0	-	5,572
1964	93,587	-	-	8,347	-	2,446
1965	118,098	-	-	23,317	-	350
1966	93,315	-	-	71,045	-	19,254
1967	129,656	10,935	-	38,274	-	11,047
1968	106,526	14,470	-	52,925	-	13,303
1969	91,027	61,966	-	131,310	-	15,093
1970	79,145	137,006	-	209,595	-	13,188
1971	110,507	100,090	-	189,594	-	12,203
1972	92,840	135,668	-	152,176	-	22,233
1973	75,353	285,509	-	232,090	-	36,641
1974	98,089	589,892	-	289,776	-	16,777
1975	63,838	710,295	-	275,009	-	2,546
1976	87,776	600,894	-	156,390	-	5,184
1977	96,757	534,875	-	257,986	-	38,863
1978	99,168	1,052,226	25,761	236,383	10,628	26,152
1979	127,673	779,316	40,217	359,946	18,466	17,165
1980	153,985	928,609	139,106	293,430	5,020	8,745
1981	158,018	1,006,938	189,068	466,451	11,285	23,680
1982	123,644	461,403	152,819	224,187	805	37,176
1983	147,910	744,879	149,999	302,598	5,064	13,320
1984	119,904	588,597	167,224	208,232	2,328	81,940
1985	146,188	516,997	248,625	267,744	2,525	57,672
1986	99,970	721,469	271,691	139,442	577	47,255
1987	131,971	442,238	121,968	0	0	0
5 Yr Avg 1983-87 Alaska	129,189	602,836	191,901	183,603	2,099	40,037
5 Yr Avg 1983-87 Lower Yukon	124,018	550,640	0	133,014	0	34,419
5 Yr Avg 1983-87 Upper Yukon	5,171	52,196	191,901	50,589	2,099	5,618

a Catches reported in numbers of fish sold in the round and pounds of unprocessed roe.

Table 2. Alaskan subsistence catch of Yukon River salmon, 1961-1987.

Year	Chinook	Summer Chum a	Fall Chum a,b	Coho a,b	Total
1961	21,488	305,317	101,772	9,192	437,769
1962	11,110	261,856	87,285	9,480	369,731
1963	24,862	297,094	99,031	27,699	448,686
1964	16,231	361,080	120,360	12,187	509,858
1965	16,608	336,848	112,283	11,789	477,528
1966	11,572	154,508	51,503	13,192	230,775
1967	16,448	206,233	68,744	17,164	308,589
1968	12,106	133,880	44,627	11,613	202,226
1969	14,000	156,191	52,063	7,776	230,030
1970	13,874	166,504	55,501	3,966	239,845
1971	25,684	171,487	57,162	16,912	271,245
1972	20,258	108,006	36,002	7,532	171,798
1973	24,317	161,012	53,670	10,236	249,235
1974	19,964	227,811	93,776	11,646	353,197
1975	13,045	211,888	86,591	20,708	332,232
1976	17,806	186,872	72,327	5,241	282,246
1977	17,581	159,502	82,771	16,333	276,187
1978	30,297	197,137	94,867	7,797	330,098
1979	31,005	196,187	233,347	9,794	470,333
1980	42,724	272,398	172,657	20,158	507,937
1981	29,690	208,284	188,525	21,228	447,727
1982	28,158	260,969	132,897	35,894	457,918
1983	49,478	240,386	192,930	23,895	506,689
1984	42,428	230,747	174,823	49,020	497,018
1985	39,771	264,828	206,472	32,264	543,335
1986	45,282	290,888	164,034	34,470	534,674
1987	53,124	275,914	245,834	48,603	623,475
5 Yr Avg 1983-87 Alaska	46,017	260,553	196,819	37,650	541,038
5 Yr Avg 1983-87 Lower Yukon	16,825	64,251	26,021	11,911	119,007
5 Yr Avg 1983-87 Upper Yukon	29,192	196,302	170,798	25,739	422,031

a Catches estimated for 1961-1976 since catches of salmon other than chinook salmon were not differentiated by species until 1977.

b Minimum estimates for 1961-1978 because surveys were typically conducted well before the end of the fishing season.

Table 3. Canadian catch of Yukon River chinook and fall chum salmon, 1961-1987.

Year	Chinook			Fall Chum		
	Commercial	Non-Commercial a	Total	Commercial	Non-Commercial a,b	Total
1961	3,446	9,800	13,246	3,276	5,800	9,076
1962	4,037	9,900	13,937	936	8,500	9,436
1963	2,283	7,794	10,077	2,196	25,500	27,696
1964	3,208	4,200	7,408	1,929	10,258	12,187
1965	2,265	3,115	5,380	2,071	9,718	11,789
1966	1,942	2,510	4,452	3,157	10,035	13,192
1967	2,187	2,963	5,150	3,343	13,618	16,961
1968	2,212	2,830	5,042	453	11,180	11,633
1969	1,640	984	2,624	2,279	5,497	7,776
1970	2,611	2,052	4,663	2,479	1,232	3,711
1971	3,178	3,269	6,447	1,761	15,150	16,911
1972	1,769	3,960	5,729	2,532	5,000	7,532
1973	2,199	2,323	4,522	2,806	7,329	10,135
1974	1,808	3,823	5,631	2,544	9,102	11,646
1975	3,000	3,000	6,000	2,500	18,100	20,600
1976	3,500	1,525	5,025	1,000	4,200	5,200
1977	4,720	2,807	7,527	3,990	8,489	12,479
1978	2,975	2,906	5,881	3,356	6,210	9,566
1979	6,175	4,200	10,375	9,084	13,000	22,084
1980	9,500	13,046	22,546	9,000	13,218	22,218
1981	8,593	9,216	17,809	15,260	7,021	22,281
1982	8,640	8,268	16,908	11,312	4,779	16,091
1983	13,027	5,625	18,652	25,990	3,500	29,490
1984	9,885	6,610	16,495	22,932	6,335	29,267
1985	12,573	6,428	19,001	35,746	5,519	41,265
1986	10,797	9,267	20,064	11,464	3,372	14,836
1987 c	10,704	6,326	17,030	40,341	3,904	44,245
5 Yr Avg 1983-87	11,397	6,851	18,248	27,295	4,526	26,190

a Indian Food Fish and Domestic fisheries combined.
b Includes small numbers of coho salmon taken at Old Crow.
c Preliminary estimates.